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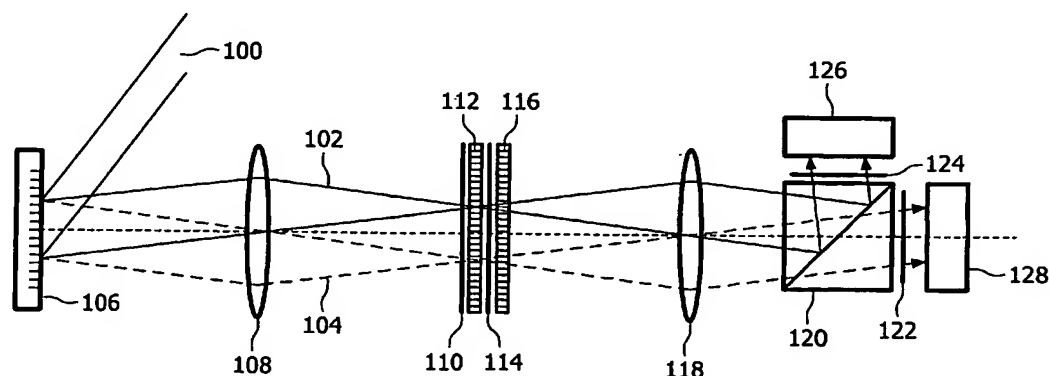
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(54) Title: **OPTICAL ANALYSIS SYSTEM USING MULTIVARIATE OPTICAL ELEMENTS**



(57) Abstract: The present invention provides an optical analysis system for determining an amplitude of a principal component of an optical signal. The principal component is indicative of the concentration of a particular compound or various compounds of a substance that is subject to spectroscopic analysis. The optical signal is subject to wavelength selective weighting and wavelength selective spatial separation specified by a weighting function. The optical signal is preferably separated into two parts that corresponding to a positive and negative spectral band of the weighting function, respectively. The separation provides separate detection of the separated parts of the optical signal without significant loss of intensity, thereby providing an improved signal to noise ratio of the determined principal component. Separation and weighting of the optical signal is realized by two multivariate optical elements.

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